Installation & Operation Guide

ADS 5240

240W ac/dc

Mixer Amplifier

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Audio Design Services Ltd, St David's House, Adcroft St, Higher Hillgate, Stockport, Cheshire SK1 3HW, UK.
TEL: +44 (0)161 666 6363 FAX: +44 (0)161 666 6366. WEB: www.ads-worldwide.net
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Product Compliance to EC directives for Standard Products

All standard products conform to the relevant directives, regulations and standards for electronic and associated apparatus. The equipment is CE marked both on the apparatus and the packaging.

Our products meet the appropriate British and International standards. A product 'Declaration of Conformity' Statement is available for each of the product ranges (available on request). This covers both the EMC and Low Voltage Directives.

UNPACKING

While all ADSworldwide equipment is carefully packed to prevent damage in transit, we recommend that the equipment is unpacked and inspected immediately on receipt. If damage has occurred please advise your carrier and your supplier who will arrange appropriate action.

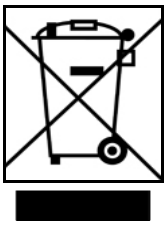
If it is necessary to re-pack the equipment for onward shipping or returning to ADSworldwide for service **PLEASE ENSURE THAT THE ORIGINAL PACKING OR EQUIVALENT IS USED.**

IMPORTANT

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of un-insulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation mark within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the appliance.

TO PREVENT THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.



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INTRODUCTION

Features

The ADS 5240 is a 240 watt rms, 2-zone, mixer amplifier, ideally suitable for powering medium and large sound systems. The technically sophisticated, built-in features, allow a wide range of applications at a competitive price. Further, the design features make the amplifier one of the simplest to configure and install with no internal adjustments or retrofit options required. Features include

- 220-240Vac (at 50Hz) or 24Vdc power operation
- 24Vdc phantom power, providing a means of distributing current through audio cables to power microphones and other equipment
- volume restoration, restoring volume levels to pre-defined factory or user-defined settings when initiating communications in areas such as paging, public address, two-way radio, intercoms and music distribution systems
- volume sensitivity and trim controls for all inputs, allowing adjustment to the level of the incoming microphone or line-level signals to match the internal operating levels of the mixer unit
- six inputs, the first five of which are balanced and feature
  - a 'universal' input allowing simple configuration via a slide switch
  - a switch-selectable, 18Vdc phantom power supply
  - a switch-selectable, two-note chime, activated when the input priority terminal is closed
  - a remote volume restoration relay able to be operated when the input priority terminal is closed
- a priority ladder for the first five balanced inputs, where
  - input 1 mutes all other inputs
  - inputs 2 to 5 operate on a 'first-come-first-served' basis
  - input 6 has no priority

  (when 'no priority' terminal is closed, all inputs act as mixing inputs)
- a switchable VOX and Siren facility on input 1; the tone is generated on closure of the priority input
- two 100V line outputs – 'Music & Speech' and 'Speech Only' (the 'Music & Speech' output is permanently connected, providing output of all amplifier traffic; the 'Speech Only' output is only connected when a priority is closed; this can provide paging only, to areas where music is not desired)
- separate bass (±8dB at 100Hz), treble (±8dB at 10kHz) and master volume controls, located on the front panel
- compact size, taking up only 2U of rack space (the amplifier is supplied with 19-inch rack mount ears).

Safety Information

WARNING – THIS APPLIANCE MUST BE EARTHED

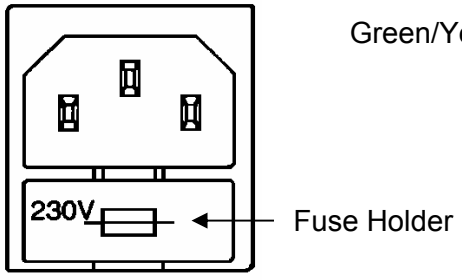
IMPORTANT

The wires in the mains lead are coloured in accordance with the following code
Green and yellow **Earth (E)**; Blue: **Neutral (N)**; Brown: **Live (L)**.

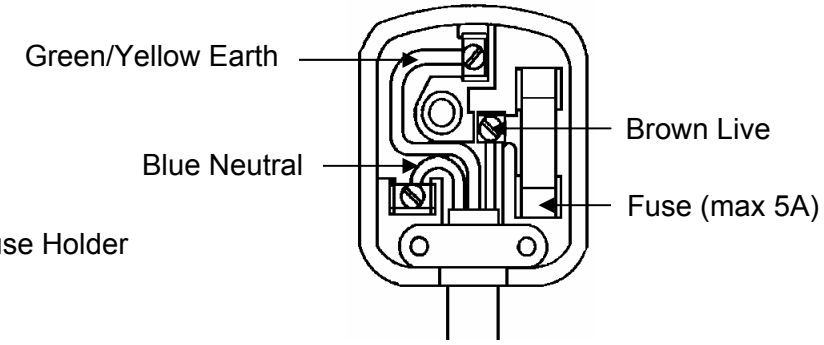
As the colours of the wires in the mains lead of the apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows

- the wire coloured green and yellow must be connected to the terminal marked by the letter E (or the safety earth symbol), or coloured green and yellow
- the wire coloured blue must be connected to the terminal marked with the letter N or coloured black
- the wire coloured brown must be connected to the terminal marked with the letter L or coloured red.

If a 13-amp (BS1363) plug or other type of plug is used, a 5-amp fuse must be fitted either in the plug or at the distribution board.



IEC Mains Inlet Socket



13A Mains Plug Wiring (UK)

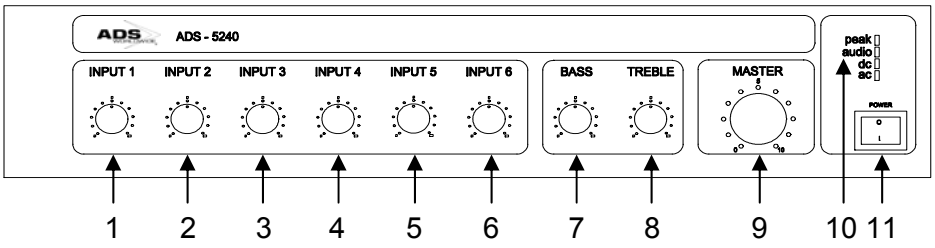
For mains connection other than in the UK, refer to your local requirements for connection to the mains supply.

OPERATION

General Installation

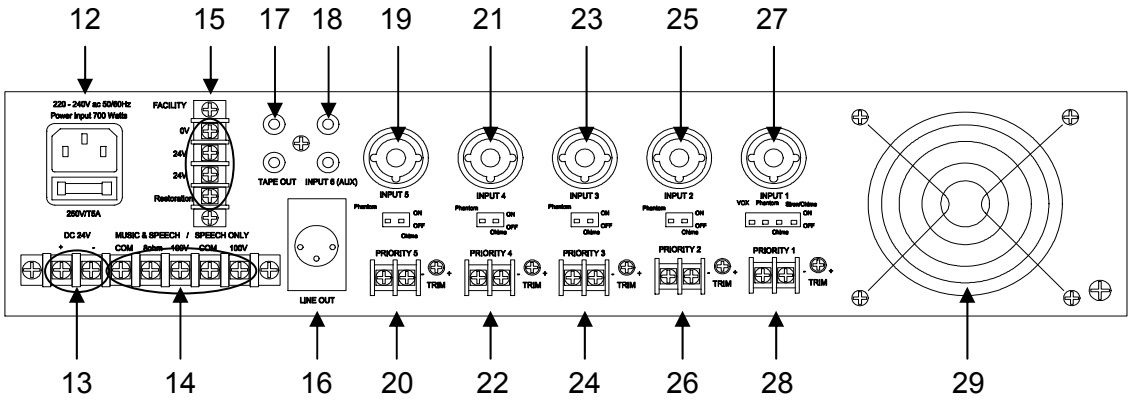
- **ALWAYS** ensure that the equipment is properly earthed (grounded). Operating without an earth is dangerous and may cause high levels of audible hum from the speaker outputs.
- **NEVER** remove the top cover of the amplifier or make an internal adjustment with the AC mains supply connected. All internal servicing should be performed by a competent and qualified engineer.
- **DO NOT** expose the unit to rain or moisture. If any fluids or foreign objects should enter the unit, disconnect the power plug immediately.
- **DO NOT** site the equipment in locations exposed to direct sunlight, near heaters or other heat sources. Avoid locations with high humidity or dust levels.
- **DO NOT** obstruct the ventilation slots in the amplifier case, and allow adequate ventilation. (Ensure that a 1U ventilation panel is fitted above the unit if the amplifier is rack-mounted.)
- **DO NOT** run microphone cables near mains, data, telephone or 100V lines.
- **AVOID** jointing the microphone cables if possible. If this is unavoidable, make sure a good screened connector is used.
- **ALWAYS** use a balanced or floating low impedance microphone on long microphone runs, terminating in a balanced input.

Front Panel



1	INPUT 1	7	BASS CONTROL
2	INPUT 2	8	TREBLE CONTROL
3	INPUT 3	9	MASTER GAIN CONTROL
4	INPUT 4	10	PEAK, AUDIO, DC & AC LEDs
5	INPUT 5	11	POWER ON/OFF SWITCH
6	INPUT 6		

Rear Panel



12	700W, 220-240Vac FUSED POWER INPUT
13	24V DC IN TERMINALS (See P11)
14	LOUDSPEAKER TERMINALS (See P11)
15	FACILITY TERMINALS (See P12)
16	LINE OUT (See P10)
17	TAPE OUT (See P11)
18	INPUT 6 (AUX)
19	INPUT 5 WITH PHANTOM/CHIME SWITCH
20	PRIORITY & TRIM INPUT 5
21	INPUT 4 WITH PHANTOM/CHIME SWITCH
22	PRIORITY & TRIM INPUT 4
23	INPUT 3 WITH PHANTOM/CHIME SWITCH
24	PRIORITY & TRIM INPUT 3
25	INPUT 2 WITH PHANTOM/CHIME SWITCH
26	PRIORITY & TRIM INPUT 2
27	INPUT 1 WITH VOX/PHANTOM/CHIME/SIREN-CHIME SWITCH
28	PRIORITY & TRIM INPUT 1
29	FAN

Priority Connections

Input 1

Closing the priority contacts directly below input 1 will cause all other inputs to be muted by greater than 40dB

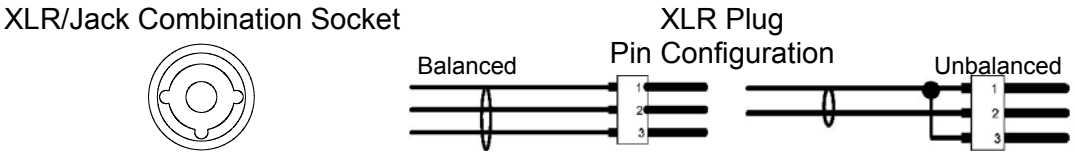
Inputs 2–5

Closing the priority contacts below each of inputs 2 to 5 will cause all other inputs to be muted assuming no other input was already accessed. These inputs operate on a 'first-come-first-served' principle; priority will not be established if another input had gained priority by being used first.

Input Connections

Inputs 1–5

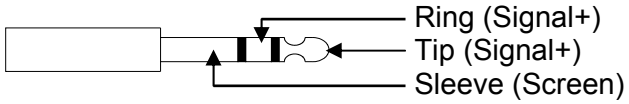
Microphone inputs 1 to 5 are balanced and use an XLR / ¼" 3-pole jack combination socket.



The connections on an XLR plug are numbered 1 to 3 and should be connected as follows
Pin 1: Ground (or Screen). Pin 2: Signal+ (or Hot). PIN 3: Signal- (or Cold)

If the signal source is not balanced then Pin 1 should be connected to Pin 3 along with the Ground (or Screen).

The ¼" 3-pole jack socket wiring is shown below.



Each of the microphone inputs 1 and 2 is provided with a trim control on the rear panel (see diagram on Page 8). This control adjusts the sensitivity of the input to allow for a wide range of input sources. Adjust this control to reduce noise and provide an acceptable, undistorted output level.

Input 6

Input 6 uses a phono connection (see below)

The two phono sockets allow connection to a stereo signal source (such as a CD/MP3 player). However, both channels are connected together internally to provide only mono reproduction.

Input Options

Input 1

Input 1 has four options, each selected by a set of slide switches located directly below the input socket. The option is turned on with the switch set in the upper position. The options are

- **VOX** – allowing a Voice Operated Switch facility to be used. When this facility is turned on, any signal (such as speaking into a microphone) above the threshold level will cause all other inputs to be muted. When the signal is stopped, the other input levels will gradually be restored.
- **Phantom Power** – providing 18Vdc phantom power on the XLR socket. This is often used to power external low current devices such as Electret Condenser Microphones.
- **Chime** – allowing the chime facility to be activated. If set, a two-note chime will be heard through the loudspeakers when the priority terminals are closed.
- **Siren / Chime**– allowing the siren or chime facility to be activated when the priority terminals are closed. If set to the siren position, a siren will sound for the duration of the closure of the priority terminals.

Inputs 2–5

Each of inputs 2 to 5 has two options selected by a slide switch located directly below the input socket. The options are

- **Phantom Power** - providing 18Vdc phantom power on the XLR socket. This is often used to power external low current devices such as Electret Condenser Microphones.
- **Chime** – allowing the chime facility to be activated. If set, a two-note chime will be heard through the loudspeakers when the priority terminals are closed.

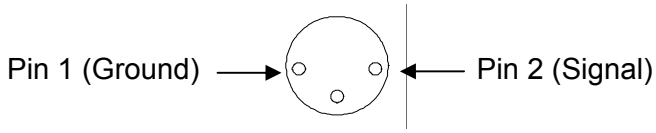
Trim Control

Associated with each input 1 to 5 is a trim control located below the input. This control allows input sensitivity to be adjusted from 1mV to 200mV. Use this control to a suitable level for your input device (for example, a microphone will need this control to be at its most sensitive position).

Output Connections

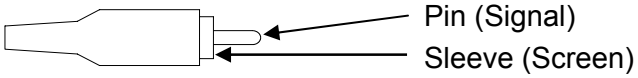
Line Out

The Line Out connector (see Rear Panel No.16 on Page 8) provides an output (1V) for connection to slave amplifiers for larger systems where more power is required. The output connections are



Tape Out

This output uses a phono connection (see Rear Panel No.17 on Page 8, labelled TAPE OUT – phono connection diagram below)



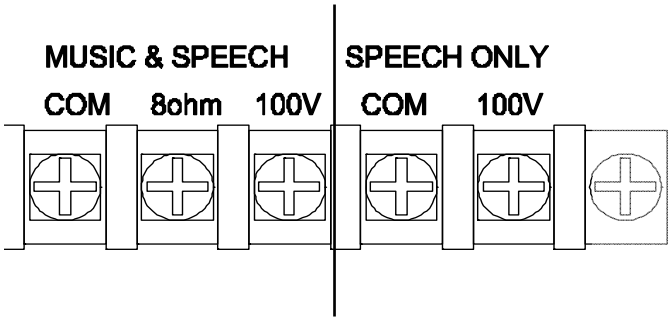
Two phono sockets are available. These are connected together internally and provide a fixed mono output, independent of the master gain control.

Loudspeaker Out

It is possible to connect 100V line loudspeakers or 8Ω low impedance loudspeakers (see Rear Panel No.14 on Page 8). *Under no circumstances must the two be mixed.* The output is overload protected.

Two loudspeaker outputs are available – 'Music & Speech' and 'Speech Only'.

- 'Music & Speech' gives a permanent output of all signals passing through the amplifier. Three terminals are provided. COM gives a common (0V) connection for both 100V and 8Ω operation. Connect the loudspeaker circuit to 100V if 100V line loudspeakers are being used or connect to 8Ω if low impedance loudspeakers are being used. Do not connect any circuit where the load impedance is less than the minimum source impedance (for example, if wiring to the 8Ω terminal, the total load impedance must not be less than 8Ω).
- 'Speech Only' gives an output during a priority condition only. The two terminals are 100V line terminals only. They are useful when an area needs coverage only from a priority source such as a paging microphone.

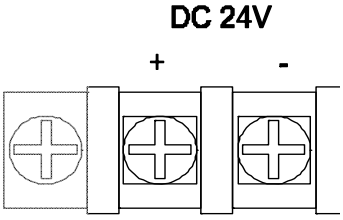


Loudspeaker Loading

To allow sufficient transient overload margin it is suggested that the output load should not exceed approximately 70% of the rated power output.

dc Power

The amplifier may be operated from a battery power source (see Rear Panel No.13 on Page 8 and diagram below). *Ensure correct polarity connection* when connecting batteries. The amplifier requires a 24V dc source. Both dc and ac power supplies can be used simultaneously. If an ac supply is present the amplifier will automatically use this. Failure of the ac supply will cause the amplifier to switch to the dc supply if present. The dc supply is unswitched, so an external switch will need to be fitted to isolate this supply.



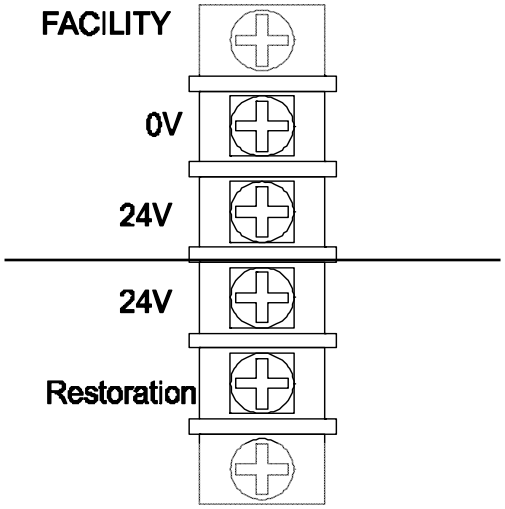
Facility Terminals

dc Output

The two top terminals of the four terminals labelled FACILITY (see Rear Panel No.15 on Page 8 and diagram below) provide a 24V current protected output, which can be used to supply external devices (such as relays or line pre-amplifiers) to a maximum of 250mA.

Restoration

The two bottom terminals of the four terminals labelled FACILITY provide volume restoration. When a closure of any of the priority terminals is detected, the terminal marked 'Restoration' will conduct to ground (open collector). This can be used to drive volume restoration relays in volume controls or to drive 'busy' lamps in multiple microphone systems.



Accessories

- 1 x Instruction Manual
- 1 x Mains Supply Lead
- 1 x 19-inch Rack Mounting Kit

TROUBLESHOOTING

Symptom	Possible Cause	Remedy
ac power LED does not light	No ac power	Ensure that the supply cable is correctly connected to the mains outlet and the supply is turned on.
	Amplifier is off	Switch on amplifier by pressing the on/off switch.
	ac fuse blown	Remove ac power cord from mains supply and amplifier. Remove and check fuse. Only replace fuse with the same type and rating – DO NOT USE A HIGHER RATED FUSE. If the fuse has failed and a replacement also fails, contact your supplier.
dc power LED does not light	No dc power	Check that 24Vdc is present at the dc input terminals on the rear of the amplifier.
	ac power connected	If ac power is being used, the amplifier automatically switches the LEDs to show which supply is being used.
	Internal dc fuse blown	The ADS 5240 Plus must only be opened by competent, qualified personnel to replace this fuse.
Sound output is very low	Incorrect level settings	Check the trim controls on the rear of the amplifier, the input level controls and the master output level control.
Sound output is low and distorted. Amplifier gets very hot.	Impedance mismatch or a short on the loudspeaker line	Check the loudspeaker circuit impedance (the minimum is shown in the specification). Check for any short to ground.
	Oscillation	Make sure that the loudspeaker circuits are kept away from sensitive microphone circuits. If these cross, make sure they do so at right angles.
Excessive hum or noise	Poor signal ground	Check all signal sources to ensure that the ground (screen) connections to the amplifier are good.
	Earth loop is present	If other equipment with a ground connection is being used an earth loop may form causing hum. Disconnect the screen connection at the amplifier. DO NOT DISCONNECT THE SAFETY EARTH FROM ANY EQUIPMENT.

SPECIFICATIONS

Amplifier		
Output Power	100V Line Low Impedance	240W @ 41.6Ω 240W @ 8Ω
Distortion at Rated Power		<2% THD @ 1kHz, -3dB
Frequency Response		70Hz – 15kHz, -3dB
Tone Control Range	Bass Treble	±8db @ 100Hz ±8db @ 10kHz
Operating Temperature Range		-10°C to 35°C
Inputs		
Sensitivity	Inputs 1–5 Input 6	1mV to 200mV continuously adjustable 500mV
S/N ratio	Inputs 1–5 Input 6	>58dB >65dB
Outputs		
Line Output		1V @ 600Ω
Tape Output		300mV
Chime		
Note		Two-tone
Mute Level		<40dB
Operating Conditions		
Mains Power		220 – 240Vac at 50Hz
dc Power		24V
ac Power Consumption		700VA at rated power
dc Power Consumption		16A at rated power
Size and Weight		
Dimensions		97(H) including 10mm feet x 430(W) x 270(D) mm
Weight		11.6kg net; 12.6kg packed

NOTES

Reference	Note

WARRANTY CONDITIONS

Audio Design Services Limited warrants that this product is free from defects in material and workmanship for the period of one year from the date of purchase. If this product is defective, Audio Design Services Limited agrees to repair or replace it, free of charge, subject to the following:

- The defect becomes apparent during unpacking or normal use
- The product has not been subjected to misuse, abuse, neglect, accident, incorrect wiring, improper installation or improper use
- The product is intact and has not been tampered with, opened, altered, or repaired by unauthorized personnel
- The product is delivered through the dealer or by the purchaser to Audio Design Services Ltd with all transportation charges prepaid, within one (1) year of date of sale
- Audio Design Services Ltd personnel examine and judge that the product is defective. If it is judged to be defective, Audio Design Services Ltd will, at their discretion, repair or replace the product with new or reconditioned parts or a product of the same or similar design
- Battery cell warranty is limited to ninety (90) days.

When returning this product, please contact Audio Design Services Ltd to obtain a returns number which should be marked on any packages to be returned. Please include your name, address, telephone number, a description of the problem and your sales receipt.

This warranty is in lieu of all other warranties expressed or implied and no one is authorised to assume any liability on behalf of Audio Design Services Ltd or impose any obligation on it in connection with the sale of any product other than as outlined above.

Audio Design Services Ltd
T/A ADSworldwide
St David's House
Adcroft Street
Higher Hillgate
STOCKPORT
SK1 3HW
UK

Telephone: 0161 666 6363
Fax: 0161 666 6366
Email: info@ads-worldwide.net
Web: www.ads-worldwide.net